

SENTARA HEALTHCARE

*A case study series on disruptive innovation
within integrated health systems*

A HEALTH CARE CASE STUDY

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EXECUTIVE SUMMARY

Sentara Healthcare (Sentara) is a not-for-profit health care system in Norfolk, Virginia. Sentara operates eight hospitals, manages approximately 400 physicians, and owns a health plan called Optima Health that has over 433,000 members. The health care system has not been interested in a closed delivery system, instead expressing commitment to a model of “relationships that work,” maintaining close ties with other non-owned health plans, physicians, and hospitals.

Integration can serve as a financial hedge

Sentara gets a third of its overall revenue from its health plan. They consider the health plan, the physician group, and the hospital as part of a “triangular hedge”—however reform affects payment models and the distribution of value within the health system, Sentara has some protection from the volatility of revenue experienced by a health care company operating only in one sector.

Integration enables experimentation

Sentara is consciously leveraging the overlap of those patients using Optima insurance and Sentara care delivery to experiment with some new payment models, bundling, etc. However, they do not necessarily see this as “practice” for full integration, but rather as innovations that could then be rolled out with other partners, both on the payer and care delivery side.

Local market’s past experiences with integration are a big factor in whether or not a health system has an appetite for integration

Sentara unwound a staff-model HMO in the ’90s and local physicians had historically not wanted to join closed groups. Sentara leaders also witnessed the physician tension and market chaos that Carilion Clinic in Roanoke experienced in their own attempts at integration. In any given market, these “local” experiences will often matter more than national “proofs of concept” in a health system’s desire to evolve towards integration.

Timing is critical to reaping the financial rewards of change

Changing too early or too late both have financial costs. There is money to be made right now in running the traditional hospital system well and in marketing insurance products allowed under current regulations. At the same time, Sentara is mindful they need to prepare for change

by piloting and experimenting with new payment models and care delivery models. Actually rolling these out in advance of regulatory requirements, however, would mean leaving money on the table.

Investing significant funds in wellness initiatives, including a \$500-per-employee rebate, has had a high ROI of \$6 of benefit for every dollar invested

Compared to earlier programs with less financial incentives, the Mission: Health program has resulted in a high level of employee engagement and over 90% participation. Financial savings derive particularly from better management of the members with chronic disease.

Consumer-directed, high-deductible health plans have become more attractive to customers during the recession and are expected to be a big part of Optima's future growth

While Optima provides consumer-directed, high-deductible health plans (CDHPs) to only 6% of its current customer base, this is the fastest-growing segment amongst Optima's plans. Optima has taken several steps to explain and improve the value proposition to physicians, employers, and patients. For example, without clear pricing for procedures, patients cannot understand what their costs will be if utilizing a CDHP. In response, Sentara has developed a Web-based portal that will give a detailed price estimate within three days for any visit or procedure at the medical group or hospital.

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This case study is composed of three sections. The first section examines Sentara Healthcare historically, focusing on how it developed into an integrated health care delivery system. The second section is a study of current innovative practices at Sentara Healthcare, many of which are most successful at an integrated health care provider. The final section focuses on what other integrated providers could learn from Sentara Healthcare's path to integration and commitment to innovation. It also discusses how health care policy reform may best support the development of integrated health care delivery systems.

I. HISTORY AND BACKGROUND

Sentara Healthcare (Sentara) is a not-for-profit health care system headquartered in Norfolk, Virginia. Sentara's mission is "to improve health every day" by offering health care at all levels, ranging from community health and primary care to hospital and nursing home services. Sentara operates 10 hospitals with an additional hospital under construction (see **Appendix A**).¹ The system employs over 500 physicians and advanced care practitioners and manages seven nursing homes as well as home care and patient transport services. Finally, it owns a health plan called Optima Health.

Hospital roots

Sentara began as a regional, hospital-based health care system in southeastern Virginia. Its roots trace back to 1888 when the 25-bed Retreat for the Sick opened in Norfolk, Virginia. By 1958, the Retreat had grown to become Norfolk General Hospital, a 475-bed community hospital. In 1972, Norfolk General merged with nearby Leigh Memorial Hospital to form Medical Center Hospitals. In 1986, Medical Center Hospitals adopted the Sentara name.

Nursing homes: first foray into vertical integration (early 1980s)

In the early 1980s, Sentara acquired a few nursing homes in the Hampton roads area of southeastern Virginia. With its expanding hospital presence, it was becoming clear that the

¹ This count includes two hospitals acquired in mid-2010; these acquisitions were expected to be final by the second quarter of 2011.

In 1982, Sentara
created its own
health plan to
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nursing facilities in the region were not able to provide the level of services Sentara hospitals needed at discharge. The nursing homes were individually owned-and-operated, older facilities. Sentara bought and remodeled the nursing homes to bring them up to modern standards.

Owning nursing homes allowed Sentara to discharge patients more quickly and to reduce bounce backs and readmissions due to lapses in long-term care. One nursing home facility was created specifically for patients on ventilators. This facility operated at cost, as these patients require a lot of sophisticated care. However, the nursing home freed up capacity in Sentara hospitals and decreased overall cost of care for long-term care patients on ventilators. It also allowed for a much higher level of quality of care for these sick patients.

Today, Sentara owns seven nursing homes, three assisted living facilities, and one home care agency. Throughout its history, it has chosen to acquire facilities in order to ensure high-quality, sub-acute, and chronic care in support of patients as they are discharged from its hospitals.

Increased vertical integration: Optima health plan (mid-1980s)

Integration protects revenues and position in market

Optima was created in 1982 when Sentara realized it would need its own health plan to protect its position in the marketplace. Anthem was and remains the biggest insurer in the state. Sentara believed that Anthem's bargaining power regarding pricing would become too strong without robust competition. Ken Krakaur, senior vice president, Optima, and president, peninsula region, explained, "The decision to integrate into insurance and later into physician management also acts as a triangular hedge. As we do not know where money will flow in the future, integration serves as a hedge to protect revenues."

Experiment with a staff-model HMO

Optima began as an independent physician association (IPA)-model HMO.² The health plan was co-sponsored by Sentara and two affiliates, Virginia Beach General Hospital (prior to its becoming a Sentara hospital) and Maryview Hospital (prior to its becoming a BonSecours hospital).

In 1988, Optima Health bought a division of Maxicare, a staff-model HMO. Maxicare, a for-profit HMO, was founded in California and grew rapidly through acquisition during the 1980s. In the late 1980s, Maxicare ran into financial trouble after acquiring a number of small HMOs and struggling to manage their expenses. Sentara bought a regional HMO run by Maxicare that was being sold off to service Maxicare's debts. Mary Blunt, vice president of Sentara Norfolk General Hospital, explained that, at the time, "We thought hospitals were going to be seen as cost centers and HMOs were going to make the money. But the market was not ready for that; we were trying to think of where the market was going but it never got there."

In the Maxicare venture, the employed physicians were unable to manage expenses and were losing money. The Maxicare product was not attracting many customers while subscriber rates in the open-model HMO and PPO products were growing. In 1996, the MaxiCare HMO was shut down, and all customers were switched to Optima's other plans.

Mix of product offerings

Optima now covers over 433,000 customers throughout Virginia, including 10,000 Sentara employees. The health plan covers 269,000 commercial customers through its HMO, point of service (POS), PPO, and high-deductible health plans (HDHP). The HMO, POS, and PPO products are fee-for-service products; the HMO plan has the lowest monthly premium and the tightest provider network. The POS plan charges slightly more than the HMO and offers a larger physician network. The PPO product has the highest monthly premium, the largest physician network and better out-of-state coverage. Darleen Mastin, senior vice president and

Among Optima's offerings, the HMO plan has the lowest monthly premium and the tightest provider network.

² An IPA-model HMO is a health plan that contracts with a group of physicians, compensating them based on procedural and appointment volume. Patients in this type of plan see in-plan physicians with a reduced co-pay, but may see out-of-plan physicians with a greater co-pay. This is in contrast to a staff-model HMO, which is a health plan that employs salaried physicians. Patients in this type of plan only see physicians employed by the HMO, so their choice of doctors is far smaller compared with IPA-model HMO products.

chief operating officer of Optima, explained, “There is a 10–15% pricing difference between the HMO and PPO products and that is enough to get people to enroll in the HMO.” 174,000 customers are enrolled in the HMO plan, 35,000 in the POS plan, and 61,000 in the PPO plan. Approximately 17,000 of these HMO and PPO members are enrolled in consumer-directed, high-deductible health plans (CDHPs). Optima covers 12,000 Medicare patients and 150,000 Medicaid patients, which represents one-third of the overall Virginia Medicaid market. All plans feature open access in that patients are not required to select a primary care doctor and do not need a referral to see a specialist.

Growth and profitability

Optima health plan has grown by increasing sales to medium and small businesses in Virginia. Sentara executives were in agreement that their system does not make strategic hospital acquisitions for the sake of expanding the regional footprint of the health plan. In some cases, the health plan was offered in regions in Virginia in advance of hospital acquisitions in that region. For example, Optima had a significant market presence in Harrisonburg, Virginia prior to Sentara’s 2010 intent to merge with Rockingham Memorial Hospital. In other cases, Sentara acquired hospitals in regions in which the health plan was not present. The Potomac Hospital acquisition in northeast Virginia was in a region where the health plan is not offered. Hospital growth does not drive health plan growth, though it sometimes brings competitive knowledge of new regions.

In 2008, Optima grew its membership by 30,000. In 2009, it grew membership by 20,000. It has the second largest market share in the region, after Anthem. It has increased its growth rate since 2005, and expects to reach its goal of 500,000 members in the next three to five years.

From inception until the mid-2000s, there was considerable year-to-year volatility in the health plan’s financial performance. In the mid-2000s, in an effort to become consistently profitable, the health plan focused on increasing revenues. The plan recruited more customers and increased premiums. On the expense side, Optima better managed expenses and improved chronic disease management. Through revenue and expense management, Optima achieved more consistent annual profits of approximately \$50 million. In 2009, Optima brought in \$987 million in revenue, or 33% of Sentara’s overall revenue.

Growth through continuous hospital acquisition (mid-1980s and beyond)

Since 1998, Sentara has acquired six hospitals and built one hospital. Sentara's hospital base began primarily serving southeastern Virginia, namely, a region called Hampton Roads. Its more recent acquisitions have expanded its hospital presence into northern and central Virginia (see **Appendix A**).

Each Sentara acquisition has continued to operate as an individual profit center. Sentara has brought management expertise as well as improvements in quality and cost control to each merger. "Each hospital is very much its own business unit, reporting to Sentara corporate for its profits and losses. We take out inefficiency and waste, eliminate redundancy, pursue better purchasing and pricing," explained Howard Kern, chief operating officer. Chief Executive Officer David Bernd added, "We put hospitalists and intensivists on 100% of the time" in an effort to improve quality and manage costs. Sentara ownership rapidly moves hospitals to profitability, often within one or two years. Following Sentara's acquisition of Obici and Potomac Hospitals, each was profitable within six to nine months.

Sentara corporate has also invested heavily in information technology (IT) at each of its hospitals. By August 2010, it had implemented an EPIC electronic medical record in seven of its eight hospitals. It had implemented an electronic intensive care unit (eICU) monitoring system in five of its hospitals and pharmacy management software in seven hospitals. Sentara leadership strongly believes that IT investment is the best platform for pursuing improvements in quality, safety, and efficiency.

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Sentara Medical Group founded (late 1990s)

Sentara Medical Group (SMG) was established in 1995. Dr. David Maizel, executive medical director, SMG, explained, "The group started primarily as a defensive move to acquire primary care physicians to hedge against the emergence of managed care." Other executives mentioned that the primary goal of integrating into physician management was to secure hospital admissions.

SMG grew gradually through acquisition of local practices and through acquisition of practices owned by hospitals it acquired. In the 1998 merger with Tidewater Health Care, Sentara acquired Virginia Beach Hospital and 40 providers, increasing the size of its provider group by 30%. From the late 1990s through the mid-2000s, SMG was composed of approximately 80% primary care physicians

Sentara Medical
Group contracts
with Optima as
well as with outside
insurers.

(PCPs) and 20% specialists. From 2007 to 2010, Sentara focused on employing specialists; its mix has changed to 55% PCPs and 45% specialists. Hiring has slowed recently, and leaders seem to agree that Sentara will not be focusing on acquiring more physician practices in the near future. At present, SMG's 390 physicians and 120 nurse practitioners (NPs), certified nurse anesthetists, and physician assistants (PAs) care for over 500,000 patients. SMG is the largest physician practice in Virginia. Physicians are practicing in 90 different locations, and practice sizes are generally smaller than those at other integrated health care providers.

A few leaders mentioned that Sentara would benefit from a different specialist mix to best match utilization of specialists by patients. They would like to have the most commonly used specialists, cardiologists, and orthopedic surgeons, but have minimal representation of these specialties in the medical group. In 2007 and 2008, Sentara looked into acquiring cardiologists, but these practices were selling at high multiples. Some Sentara leaders also noted that there are too few NPs and PAs to help physicians, and that, in general, SMG physicians are not in the habit of delegating work to other medical professionals. Other leaders thought that the number of professional support staff was in the right range.

Physicians have joined SMG for a number of reasons. First, SMG provided security and less earnings volatility, as providers have been paid a salary based on productivity. Second, Sentara brought practice management expertise and its EMR to physician practices, which physicians value. Finally, Maizel explained, "Our physicians have enjoyed a 10–15% salary advantage in the marketplace. This is in contrast to most integrated delivery systems, where physicians take a pay cut for joining because the system manages their EMR and overhead." Over the last 10 years, however, Sentara had believed it needed to offer a premium in order to compensate physicians for giving up the potential upside of their own private practices.

Physicians at SMG are paid 100% on productivity. There have been discussions about creating performance metrics for both primary care physicians and specialists, but as Maizel explained: "We have very little information for most specialties on office-based standardization. There's a real void out there. Performance metrics, especially for specialists, do not exist."

SMG has always been an open practice, meaning that it contracts with Optima as well as outside insurers. Optima patients account for 22% of SMG's volume. For these patients, by cost, 90% of their care is delivered in the office and 10% through the hospital. This split has been a focus at Optima, which, in an effort to reduce overall cost of care, actively manages patients with chronic disease.

21st century

Cultural shift in physician values

Since 2000, health care costs and reform have been in the political spotlight. As a result, local physician values have begun a slow but gradual change. Physicians who had previously been resistant to salaried positions have been more willing to consider a salaried practice. Importantly, physicians have begun to accept that the fee-for-service model may become a fixed-fee model. Maizel explained, “The perception shift hinges on a single mantra: it’s no longer all about the doctor, it’s about the patient. Younger physicians especially want to practice medicine and are much more comfortable with a large group setting and a salary. It tends to be some of the older physicians who are not willing to pay for an EMR or take a salary and do not want to give up autonomy. The younger ones recognize the infrastructure benefits SMG offers: the EMR and connection with the hospitals.” SMG has found it easier to enter negotiations and hire physicians in the past few years. The price paid for physician practices has also been decreasing since a peak in the early 2000s.

While the health care reform package was being drafted in Congress, Sentara mapped out different financial scenarios.

Commitment to quality, safety and information technology

Sentara has differentiated itself through its commitment to information technology, which enables improvements in quality, safety and expense management. In 2005, it implemented a system-wide electronic medical record. Bernd explained, “The EMR improves quality, and I firmly believe that lowers overall cost of care. I see in our EMR a high rate of return from a quality, safety, and economic standpoint.” Sentara hospitals have garnered awards for low infection rates and have won national rankings for quality outcomes in heart disease and joint repair.

Preparing for regulatory changes

Conscious of regulatory pressures, Sentara has continuously explored cost-cutting opportunities. Regulatory changes in health care historically have resulted in payment cuts from Medicare and Medicaid, which leads to pricing pressure from all payers. The health care reform package passed in March 2010 proposed further cuts to Medicare and Medicaid fee-for-service payments and may switch to capitated payments in 2013 or beyond. While the reform package was being drafted, Sentara mapped out different financial scenarios. Modeling a universal health care scenario, it explored what its revenues would be if all payments were dropped to current Medicare rates. They found that revenues would fall 30% or \$300 million.

Sentara responded by setting a goal of reducing expenses by \$30 million every year from 2009 to 2011. The goal was met through a variety of cost-cutting measures, both big and small, from closing the obstetrics ward at its CarePlex hospital to dropping its promotional budget, ending payment of organizational dues for its employees, and cutting down on printing and paper supplies. Blunt said, “It sent a signal to physicians and all employees that cost cutting is in our future.” Sentara also created pilot programs that aimed to drop health care delivery expenses 30%. These business-model innovations are described in Section II.

From its beginning as two hospitals, Sentara has evolved into an integrated, quality-oriented delivery system. Michael Dudley, president of Optima, explained, “In addition to a health plan, physician practices, and hospitals, Sentara has nursing homes, home health care services, ambulance services, patient transport, long-term care facilities, a long-term acute care hospital, and community wellness programs. In a way, Sentara is more vertically integrated than many large integrated systems.”

II. DISRUPTIVE POTENTIAL OF PRESENT-DAY SYSTEM

This section will examine Sentara’s success in innovation and plans for future innovation. First, we will explain how leaders at Sentara view innovation efforts. Next, we will discuss how Sentara has successfully implemented enabling innovations such as its electronic medical record. Third, we will examine successful disruptive innovations at Sentara, including innovations in quality, safety, and wellness (see **Figure 2**).³ Finally, we will discuss disruptive innovations currently in development, including changing pricing models and managing overall costs of care.

Categorizing Sentara’s priorities and successes in innovation

Figure 1 classifies disruptive innovations into 10 categories. For each innovation, Sentara leaders judged how important they viewed the innovation to be and how much progress Sentara has made in pursuing the innovation.

³ *Disruptive innovation* is a term coined by Harvard Business School Professor Clayton Christensen, describing changes that improve a product or service in ways that the market does not expect, typically by lowering price or designing for a different set of consumers. It contrasts with *sustaining innovation*, a process of incrementally improving existing processes in ways that only serve the interests of existing customers. An *enabling innovation* is a new product or service that supports the disruptive process. An example of an enabling innovation is an information technology platform that allows a health care delivery company to decrease overall cost of care.

Figure 1 Sentara's priorities and successes in innovation

Elements of disruptive innovation	Priority level	Management's assessment of progress
Cultivating a shared belief in quality guidelines and evidence-based medicine	Extremely High Unified View	Advanced / Unified View Focus on and achievement of quality benchmarks, national recognition for commitment to quality
Leveraging information and decision-making tools, including electronic medical records	Extremely High Unified View	Advanced / Unified View Successfully implemented EMR, eICU; Optima database linked to EMR platform to explore new business models; working now on real-time prompts to follow best practices
Engaging and incenting consumers to take health care out of exam room	Extremely High Unified View	Some Progress / Unified View Sentara employees effectively incented by wellness programs; rest of community and patients at hospitals and SMG not included yet
Using effective case management to reduce illness and emergencies	Valued Unified View	Some Progress / Divergent View Optima leveraging case management abilities; Sentara Medical Group and hospitals working on it, at early/pilot stages of implementation
Building connections across continuum of care for better chronic disease management	Valued Unified View	Little Progress / Divergent View Small pilots are bringing hospital, PCP, and specialist together to manage chronic disease; Optima further along in managing chronic disease
Thinking of the health of populations rather than individuals	Valued Unified View	Little Progress / Divergent View Talking about it, but more implementation needs to occur
Ensuring everyone practices to top of license	Valued Unified View	Little Progress / Divergent View Most believe physicians do all tasks, including ordering scans, and there is little being done to encourage use of registered nurses (RNs) and PAs; some believe that there is interest in hiring more support staff
Managing overall cost of care, and not departmental profit and loss	Somewhat Valued Unified View	Little Progress / Divergent View Sentara hospitals have individual profit centers; small pilots exploring overall cost of care; consistent view that Sentara will wait for payment reform before progressing in this area
Moving standard care to most cost-effective venues (e.g. retail clinics, employer sites, e-visits)	Somewhat Valued Divergent View Less important; some perceive as important	Little Progress / Unified View Hospital-based system—care mostly at hospitals or specialist offices; no e-visits, as they are difficult to implement within current payment/incentive structures
Allowing caregivers to focus more efforts on sicker patients	Somewhat Valued Unified View	Little Progress / Unified View

Sentara does not lay off employees if a new venture fails but will move them to different divisions instead.

The table on the previous page shows that leaders are unified in valuing and pursuing innovations in infrastructure and information technology. Executives are also unified in supporting the importance of taking health out of the exam room. Furthermore, leaders believe that Sentara has made strides in this latter area through its wellness programs. Leaders' views diverge regarding the importance of pursuing pricing and business-model innovation. For example, when discussing moving care to more cost-effective venues, some leaders believed that "e-visits are not good medicine" while others said they were performing successful e-visits for prior employers. Still others explained that they had no way of being reimbursed for e-visits. When discussing the issue of ensuring that professionals practice to the top of their licenses, some leaders commented that Sentara Medical Group has an extremely low ratio of registered nurses (RNs) and PAs to physicians. These leaders believed that practices could be more efficient if more RNs and PAs were used. Leadership also expressed divergent responses to managing departmental profit and loss. Each hospital is evaluated by its bottom line, but leaders mentioned that this creates problems when trying to decrease cost of care across Sentara's organization.

Enablers of innovation: culture, EMR, and health plan database

Culture: embracing experimentation and organization-wide learning

Sentara Corporate has funded infrastructure investment (i.e., EMR) and pilot studies that explore business-model innovation. It incubates teams such as the Clinical Innovations Work Group, which is composed of representatives from corporate, hospitals, SMG, and Optima. This work group is creating business-model pilots that are experimenting with new compensation models aimed at lowering overall costs of care. Individuals are encouraged to act as "champions" to steer pilots towards success. Sentara minimizes risks for these champions. For example, Sentara guarantees salary floors for physicians who participate in fixed-fee-payment pilots. Sentara also does not lay off employees if a new venture fails but will move them to different divisions instead. Profits from successful innovations are shared across participating divisions. Each year, Optima gives bonuses to Sentara hospitals for meeting quality benchmarks and managing chronic disease; in 2009, Optima awarded the hospitals \$8 million. Dr. Gary Yates, senior vice president and chief medical officer, explained, "The board grades the top 100 managers as a team, so we work together." Dudley added that Sentara-wide teamwork and learning "creates a barrier to entry of our [insurance] competitors moving into integrated health care."

“Culture is the cornerstone of innovation,” explained Bernd. The CEO has encouraged growth from within, as well as risk-taking and learning from failures. It is common for employees to work for Sentara for decades across multiple divisions. Blunt related that “There is a wide breadth of opportunities; you can experience a lot of different things. It is a good way for Sentara to motivate and retain talent.” Such exposure may create executives with greater managerial insight. Maizel explained, “One of the great things about this organization is [that] if you can show the pilots work, [Sentara] will do it. I can see certain pilots spreading out through the entire organization if they show cost-effectiveness and quality improvements.”

The culture of experimentation at Sentara is also influenced by leaders who have managed care backgrounds, including: Dr. Yates, senior vice president and chief medical officer; Mark Szalwinski, vice president, peninsula region; Dr. George Heuser, vice president and medical director, Optima; and Michael Dudley, president, Optima. These leaders have contributed their experience in managed care to help colleagues conduct scenario planning for possible regulatory changes, as well as to design the business-model pilots.

Electronic medical record

Beginning in 2005, Sentara began investing in a system-wide electronic medical record (EMR) system: eCare. The eCare system required a \$67 million capital investment for six hospitals and 300 Sentara Medical Group physicians, plus additional operating expenses for work process redesign, implementation, and staff training. By the beginning of 2011, seven of Sentara’s eight hospitals and most of its Medical Group practices will be linked to its eCare system. Sentara’s eCare links to all points of care: nursing homes, hospitals, hospital pharmacies, ambulances, Optima, and all Sentara Medical Group primary care and specialist physicians.

Patients can access the EMR through a portal called MyChart. They can make appointments, check lab results, and follow up with their care providers. Initially, Sentara tried to offer Optima members the benefit of using MyChart for free, while all other patients had to pay to use the portal. Physicians did not like charging some patients to use the portal, as they perceived the arrangement as unfair. Sentara therefore allowed all patients free access to MyChart; as a result, adoption is exceeding expectations.

The extent of the Sentara EMR has set Sentara apart from other health care providers. “The EMR is a game changer, it makes working here different, that we will try things that big. We have talent, deep pockets, buffering systems, as well as

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—Mark Szalwinski,
VP, peninsula region

human capital and financial reserves to absorb potential adverse consequences,” explained Szalwinski. The EMR has been a platform for improvements in quality and efficiency. Since implementation, hospitals reduced pharmacy fill times from an average of 132 minutes to an average of 35 minutes. Sentara contracted with LYNX medical systems to improve coding and revenue generation in its Emergency Departments (EDs). LYNX used Sentara’s EMR data and found that EDs were undercoding. Sentara corrected its coding to reflect its patient mix and increased ED revenues by \$30 per patient.

Kern explained that the EMR also serves as a platform for ongoing innovation: “For example, we want a heart failure patient’s weight gain to trigger a prompt that the physician order more diuretics. If the physician does not respond, the EMR will trigger a prompt further up the chain. We are trying to create real-time, evidence-based management systems. We want to take the EMR to the next level.” In addition to real-time, clinical decision support, Sentara leaders hope to develop an EMR that will improve care pathways, standardize care, and improve quality and patient satisfaction.

In addition, current pilot studies in business-model innovation rely heavily on reporting outcomes and cost information. The EMR, linked to Optima’s information systems, allows Sentara to follow the quality, outcome, and cost implications of these pilots.

Optima health plan database

Integration into insurance has provided Sentara with a database of claims and outcomes data. It developed this system in-house because leadership was convinced that the data could help them improve quality and efficiency. Dudley explained that developing the database internally has created an excellent product. “We went down to actuaries at a large, national insurance company and showed them our data. They acknowledged we had very good data and analysis that superseded many national insurers.”

For example, when Sentara started tracking HEDIS⁴ data in-house, Optima saw that CT and MRI utilization for its patients was growing 12–20% year over year. Optima instituted a pre-authorization requirement for all CT and MRI

⁴ Healthcare effectiveness data and information set: performance measurement tool run by National Committee for Quality Assurance.

scans. Utilization decreased the first year, then increased with additional clinical indications, but at a slower rate. For Sentara, this intervention improved safety by eliminating unnecessary scans and lowered costs.

The Optima database is currently informing the business-model pilots Sentara is running. It helps determine how to price new insurance products and bundled payments, how revenues can be shared among hospitals and physicians, and how best to manage chronic disease. The database is therefore rich in financial, quality, and outcomes data and serves as a platform from which to launch innovations.

Disruptive innovations: wellness, quality and safety, eICU, high deductible health plans, hospital-within-a-hospital

Wellness

Sentara has launched two employee wellness programs. The first, Healthy Edge, started in 1994 and is a voluntary program that provides fitness and nutritional education to more than 10,000 Sentara employees. Healthy Edge gives small rewards such as T-shirts for meeting fitness or health goals. Director of Community Health and Prevention Terrina Thomas explained, “All of our programs are incentive-based. We know it helps people to participate.”

Sentara launched another employee wellness program, Mission: Health, in 2008. The program was created to be more interventional and to have greater monetary incentives under the Healthy Edge umbrella of programs and services. Employees who enrolled were assessed on five criteria: weight, cholesterol, blood pressure, smoking status, and how frequently they exercise. Thomas explained, “We have had a very high level of participation in Mission: Health. The Healthy Edge program had moderate participation, but Mission: Health has had more than 95% participation for completion of the personal health profile. Virtually everyone is signing up.”

All employees who are healthy on at least four out of five measures are given an automatic reduction on their monthly health insurance premium. All employees who score healthy on less than four measures are assigned a health coach. The employee, in consultation with their coach, sets goals in the five wellness areas. Employees who continue to meet with the coach are given the same rebate on their premiums as those who are healthy on four or five measures. Finally, employees who have a chronic disease are invited to join a specialized disease management program. Thomas said, “These employees get more money than others if they participate. At

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Employee wellness
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first, others complained that the sicker employees got higher rebates than the well employees. But, once we showed overall program savings, we proved that Sentara-wide costs were reduced and people stopped complaining.”

Thomas and the Mission: Health program managers initially thought they would hire internal patient service coordinators (PSCs) to run the life coaching and chronic disease management arms of Mission: Health. As Thomas explained, “Suddenly, we had 9,000 people who wanted to be managed and three full-time PSCs. Our regular PSC staff manages a maximum of 500 patients per employee. So, we searched for a vendor and found that Healthyroads was clinically qualified and more cost-effective. They now provide our health coaching services.”

Optima’s management of chronic diseases for Mission: Health and the rest of its insured population has improved with time. Thomas recalled, “Our prevention teams were working in silos. If you were a pregnant diabetic who smoked, you had three different case managers calling you. Now there is one cross-trained person. We were saying the patient was the center of the universe but that was not the case.”

Sentara Corporate committed more than \$500 to each employee in premium reduction incentives to participate in the Mission: Health initiative. Employees with targeted chronic diseases or who were pregnant at the time were eligible for additional incentives worth \$460 per year. The program began in 2008, and medical costs were greater than expected that year. An analysis of the data indicated that cost increases came from employees starting to address previously untreated conditions with medication and doctor’s visits. By 2009, significant clinical improvements were recorded across risk factors, especially for the group of patients with chronic disease. Compared to a predicted annual 8–10% rise in costs, or a \$4.2 million increase over two years, costs rose only \$1.28 million over those two years, saving almost \$3 million dollars. Health care costs for the members of the disease management group dropped by 37% per employee (not including pharmacy costs). Every dollar invested in the program returned \$6 in savings.⁵ The savings were found in reducing hospital admissions, decreasing ancillaries, decreasing the use of the emergency room for non-emergency care, and increased compliance with prescriptions. Overall, Dudley observed that Mission: Health has successfully “managed disease conditions and avoided disease crises.” Dr. Heuser added, “The value in Mission:

⁵ Data cited is from Sentara’s white paper “Wellness Payoff: Sentara Healthcare and its Mission: Health”; study design and data were reviewed and validated by AonHewitt.

Health is in the management of patients with chronic disease. That is where we see direct, significant return on investment. The incentives get everyone to join, but the real benefit is in connecting with patients who have significant diseases we can manage.” In addition, the program increased wellness throughout the organization and encouraged individuals to be engaged in promoting their health.

Sentara has made wellness programs a priority for the long-term for the Optima-insured population of Sentara employees. Wellness and preventive programs in the community are frequently not cost-effective, explained Thomas, nor are they cost-effective in a population insured for the short-term. The average commercial customer is with Optima for five years; the average Medicaid customer is with Optima for six months. The average Sentara employee frequently stays with the company for decades, providing incentives for the company to manage wellness.

Quality and safety

Sentara hospitals have been the primary focus of numerous successful quality and safety initiatives (see **Figure 2**). The hospitals began a Culture of Safety initiative in 2002 in an effort to decrease adverse events, including nosocomial (hospital-acquired) infections. Nosocomial infections in the United States are thought to cause up to 100,000 deaths annually and cost approximately \$5 billion to treat. The Culture of Safety initiative requires all caregivers to follow rules based on Behavior Based Expectations (BBEs). Caregivers work as a team to implement best practices when performing procedures (e.g., inserting central lines) and identifying and addressing problems. As a result, Sentara has seen an 81% reduction in serious safety events between 2003 and 2010.

Sentara also tracked infection rates in its hospitals and documented huge reductions in this area due to its Culture of Safety initiative. Across Sentara hospitals, rates of central line-associated infections decreased 93% from 2002 to 2009. Sentara Williamsburg Regional Medical Center has had no cases of ventilator-associated pneumonia (VAP) in six years.

Monthly, there is a system-wide patient safety meeting. A recent meeting examined whether patients were getting unnecessary radiation due to overutilization of scans in the emergency room. Bi-weekly clinical effectiveness councils have been created that bring together physicians and operations personnel. These councils look at how Sentara hospitals are managing their most complex and costly patients, such as those with heart failure or sepsis. The IT department helps physicians and leaders track and evaluate safety trends, and departments work together to put together

Sentara hospitals,
rates of central line-
associated infections
decreased 93% from
2002 to 2009.

Figure 2 Successful disruptive innovations at Sentara

Innovation	Measurable success matrices
Wellness (Mission: Health)	<ul style="list-style-type: none"> • 98% participation rate • \$6 returned for every \$1 invested
Quality and safety: Culture of safety Save antibiotic strength Asthma Sickle cell crisis	<ul style="list-style-type: none"> • 100% decrease in ventilator-associated infections in some hospitals • 93% decrease in central line infections • Decreased antibiotic prescriptions by 13% in 5 months • Improved school attendance • Decreased readmissions
eICU	<ul style="list-style-type: none"> • 12% decrease in length of stay • 25% decrease in mortality rates
Hospital-within-a-hospital	<ul style="list-style-type: none"> • Improved outcomes in cardiac care • Instituted care algorithms in cardiac surgery and heart failure
Consumer-directed, high-deductible health plans	<ul style="list-style-type: none"> • Fastest growth of all Optima plans • Lowest monthly premium of all Optima plans • Increasing price transparency at local hospitals

protocols and checklists to manage patient care. “At the councils, we ask whether there are any breakdowns in communication—do we have the right order sets, how do the admitting physicians leverage hospitalists and intensivists?” explained Natalie Kaszubowski, vice president of information systems. “We’re trying to create a high reliability organization,” she added. The goal is to standardize care of the sickest patients, improve care process flow, and thereby improve outcomes while lowering cost.

“Resistance Kills/Save Antibiotic Strength” was a program developed by Optima and then expanded to be system-wide. In the hospitals, pharmacists, physicians, and nurses worked together to achieve a 13% reduction in antibiotic prescriptions in five months. Bernd explained that the benefits of the safety and quality initiative are many; once they generate data supporting quality improvements, “physicians will follow, customers will follow, and payers will follow.”

Optima has launched disease management initiatives that have improved quality and lowered costs. One successful initiative significantly reduced days of school

missed in its pediatric asthmatic population from over 10 days per year to none. Sentara was awarded the National Environmental Leadership Award in 1995 by the Environmental Protection Agency for their asthma initiative. Another initiative reduced hospital readmissions in sickle cell patients. Senior Vice President of System Development Vicky Gray explained, “Representatives from the health plan, hospitals, and home care department got together, and it turned out that hydration at home was really important in breaking the cycle of crises. We were able to prevent constant hospitalization in these patients.” The program provided far better quality and outcomes, but it turned out not to be cost-effective and was not continued. Gray explained that they are beginning to explore creating care standards “across all facilities.” The integrated nature of Sentara allows them to come up with system-wide solutions that will improve care. The “siloes” disease management programs that Thomas mentioned were rolled into a comprehensive, integrated Clinical Care Services program. The content and outcomes are preserved, but they are delivered in a patient-centric method rather than using a disease-centered methodology, and access all family members as appropriate.

In the first year of use, the eICU system demonstrated consistent improvements in quality and reductions in cost.

Electronic ICU

In 2000, Sentara implemented their eICU on a pilot basis in 35 beds at Norfolk General and Hampton General Hospitals. The intensive care unit (ICU) houses the sickest patients in the hospital and, on a per diem basis, the most costly patients. Sentara leadership recognized that closer ICU monitoring might lead to better outcomes and shorten length of stay in the ICU.

eICU aggregates all bedside monitors—patient vitals, telemetry (cardiac monitoring), oxygen saturation, video cameras, and two-way conferencing—at a central station in the ICU. Nurses and intensivists can monitor the data on a real-time basis. Alerts prompt staff to give medication or to respond if a patient is becoming unstable. The electronic monitoring ensures that care meets standards, protocols are followed, and allows communication among caregivers in real time.

In the first year of use, the eICU system demonstrated consistent improvements in quality and reductions in cost. An independent evaluation showed that ICU mortality rates fell 25% at Norfolk General and the average length of stay fell 17%. eICU created an estimated cost savings of \$2,150 per patient by increasing ICU

capacity and reducing patient expenses.⁶ eICU is now implemented in 10 ICUs in five Sentara hospitals.

Based on eICU's success in managing length of stay and measuring outcomes, Sentara is exploring managing post-acute care through advanced monitoring. The goal is to transfer patients from the step-down unit, which has a nurse-to-patient ratio of 4 :1, and onto the med/surgery floor, with a nurse-to-patient ratio of 8:1, earlier. Patients are monitored with real-time vitals, telemetry, video cameras and two-way communication. The monitors prompt nurses, hospitalists and surgeons to administer medication and follow protocols. The monitors are also color-coded: green indicates healthy vitals, yellow indicates troubling vitals, and red indicates that a patient needs prompt attention. The pilot study is tracking whether prompt attention to patients who enter the yellow zone will prevent codes (when a patient's heart stops or when a patient stops breathing).

Hospitals-within-a-hospital and freestanding emergency departments

Sentara Heart Hospital was opened at Norfolk General Hospital in 2006. The hospital performs 2,000 cardiac surgeries annually in five combined operating rooms (ORs) that are set up to transition from a minimally invasive, interventional procedure to a surgical procedure. *U.S. News & World Report's* Best Hospitals Survey ranked Sentara Heart Hospital 43rd in the nation for heart surgery in 2010.

Sentara invested \$96 million in the design and implementation of the Sentara Heart Hospital. Blunt explained that the heart hospital lost a considerable amount of money in the first few years of operation. Investment in infrastructure and payments to cardiologists and cardiac surgeons far exceeded revenues in the first few years of operation. It is now beginning to recoup costs. In 2010, Sentara Norfolk General and Sentara Virginia Beach General hospitals combined their cardiac surgical programs. They previously had the same surgeons but now have the same surgical teams as well. This change was made to cut costs and improve quality and consistency in usage of protocols and best practices.

Blunt noted that the heart hospital would have been better served by combining cardiac and vascular care within one center. Currently, Sentara operates multiple stand-alone vascular care centers and multiple cardiac units in other hospitals, which

⁶ From www.Sentara.com (9/12/2002) http://www.sentara.com/News/NewsArchives/2002/Pages/eicu_model_for_icu_care.aspx

feed Sentara Heart Hospital some of the time. She suggested that if all cardiac and vascular procedures were centralized, there might be infrastructure and cost savings across the system.

Sentara's long-term acute care hospital (LTAC) occupies a floor of Norfolk General. The LTAC is an entirely separate cost center from the hospital. It contracts with Norfolk General to pay for all services used at the hospital, such as diagnostic tests. Patients must be discharged from the hospital and admitted to LTAC and vice versa. The LTAC realizes efficiencies in contracting out some elements of care. The hospital receives benefits in discharge planning; being so close to the nursing home allows the hospital to be able to manage and plan for capacity changes. Blunt explained, "The presence of LTAC saves Norfolk General \$4–5 million a year due to better execution of discharges."

Sentara has three freestanding emergency departments (EDs). It built two and inherited one when it merged with another hospital. Blunt explained that the EDs are a "great concept. They work for the consumer and work for the hospital. They are a walk-in, walk-out business and they exceed all expectations. They beat financial metrics really fast, on volume and efficiency and cost of service." When the EDs were originally built, there was concern over whether they would be taking volume away from Sentara hospital EDs. Instead, the freestanding EDs have absorbed excess capacity from the community.

Consumer-directed, high-deductible health plans (CDHPs): multiple avenues to increase adoption

Approximately 6% of Optima's commercially-insured members are enrolled in a consumer-directed, high-deductible health plan (CDHP). This product is a different type of HMO or PPO plan, where the health benefits can be combined with a health savings account (HSA) or an employer-funded health reimbursement arrangement (HRA).

CDHP is the fastest growing segment of Optima's commercially insured plans. CDHP enrollment grew by more than 40% from year-end 2009 through the third-quarter of 2010. In contrast, enrollment in Sentara's other commercially insured HMO/PPO plans grew by less than 4% during that same time period. Historically, the market in Virginia has been dominated by open (non-staff-model) HMO and PPO plans. The financial environment following the 2008 recession has driven customers to change their concerns. According to Optima's Director of Strategic

The consumer-directed, high deductible plan is Optima's fastest growing product.

Business Development Steve Cindrich, many customers are now focused on “price, price, and price.” In recent years, rising health plan costs have resulted in benefit design changes that shift more costs to employees. Due to higher deductibles, CDHP offers some of the lowest monthly premiums of all of Optima’s commercial plans.

There are a number of barriers to continued growth in the CDHP market, however. Cindrich says that some employers find the product confusing. It takes considerable education time to explain the advantages of CDHP and how it works for employees. Another barrier to adoption occurs at the physician’s office. The average physician practice collects payments in 30 to 60 days. If a patient with a CDHP with a \$3,000 deductible undergoes a \$500 procedure, the patient may not have the money to pay that bill at the point of care. In contrast, if the patient had a PPO or HMO with no deductible, the insurer would pay the doctor within the traditional 30-to-60-day window. Many medical providers are therefore concerned about the impact CDHP will have on their ability to collect timely payments from patients.

Incenting employers to adopt CDHP through financing flexibility and education

To encourage adoption of CDHP, Optima visits with employers and explains to them the inherent flexible funding options of both HRAs and HSAs.⁷ Many employers tend to prefer HRAs over HSAs because the account does not need to be pre-funded; expenses are paid as claims are incurred. This optimizes cash flow and reduces total expenses for many companies. Also, the employer can choose to require an employee to pay a portion of the expense prior to the employer’s contribution or vice versa. Uniquely, Optima offers employers a number of choices in how their HRA is structured to help their employees finance qualified medical expenses. Furthermore, Optima created a program where, once a claim is adjudicated, the medical provider is paid directly from the employer’s funds for eligible expenses; employees don’t have to submit claims forms to have claims paid out of the HRA. This minimizes paperwork and assures that a portion of what is owed goes to medical providers. Employees have access to secure Web resources to monitor their claims, HRA payments, and fund balances.

⁷ Health reimbursement accounts and health savings accounts; consumers can invest in these accounts through their employer on a pre-tax basis to pay for health care expenses.

Changing sales-channel payment incentives

CDHP adoption is also impeded by how brokers are paid. Insurance brokers are given a percentage of the annual premium for every policy they sell. Since CDHPs have the lowest premiums of all products, brokers are paid the least for selling these plans. Optima pays brokers extra fees for customer education. The brokers still make more overall selling HMO and PPO products, but the educational fees increase their revenues from selling CDHPs and offset some of the costs of educating the employers and employees. In all, Optima is taking a multi-faceted approach to making CDHPs palatable to physicians, customers, employers, and brokers.

Creating price transparency at point of care

Finally, CDHP adoption is also slow due to a lack of price transparency at the point of care. Without clear pricing, patients cannot understand what their costs will be when purchasing a CDHP. Cindrich explained, “Customers want price transparency right now to get them to purchase CDHPs. This matters more than quality information, which patients see as too complex and too far down the road.” In response, Sentara has developed a Web-based portal that will give a price estimate for any visit or procedure at SMG or the hospital. The patient enters their insurance information and the site of care. Within three days, the patient receives a phone call with a detailed cost estimate, including co-pays and deductibles. The state of Virginia also has a cost comparison portal, which is a Web-based estimator of the costs of all hospital-based care. The portal compares the cost of any diagnosis-related group across Virginia hospitals.

Innovations in the pipeline: patient-centered Medical Home pilot, chronic disease management pilot, bundled payment pilot for joint replacement

Pilots to decrease overall cost of care

In response to regulatory changes that might drive a conversion to capitation, Sentara created a “2010 Transformation Agenda.” They are exploring four pilot studies in an effort to create an Accountable Care Organization (ACO). Sentara prefers to call the pilots experiments in “bundled” or “fixed” payments. Leaders avoid using the expression “capitated” to minimize association with failed efforts at capitated HMOs in the 1990s. Dr. Maizel explained, “The ACO is the platform for how we are going to transform care. What is missing in health care right now is the

Patients can use a
Web-based portal to
get a price estimate
for procedures at
Sentara Medical
Group or any of the
hospitals.

The Medical
Home pilot aims
to decrease the
expected rate of
growth in health
care costs by 30%.

reimbursement model. So we are experimenting with payment reform, and because we have the Optima health plan, we can do that. In the closed system [we are creating], the source of dollars is the same, but we are exploring how to distribute the dollars differently and how to incent different types of behavior.”

Along with these discussions come potential changes in incentive payment structures. Currently, SMG physicians are paid on straight productivity. The practice is considering compensating up to 10% of salary based on meeting quality measures and exploring how to fit expense management into compensation. Sentara does not want to move to a strict capitation model where physicians take on all of the risk of cost of care. Dudley explained, “Physicians want to practice medicine. That is why they became doctors.” Optima is willing to bear the risk if physicians are willing to commit to best practices and manage disease across all points of care.

Patient-centered Medical Home pilot: redesigned primary care

Two primary care practices led by four physicians are experimenting with a redesigned office structure, which began in July of 2010. Physicians will receive a per annum fee for participating in the pilot and meeting the clinical and operational goals of the new care delivery model. The physicians running the pilot are from Sentara Medical Group and the patients are covered by Optima Health. Patients will be admitted to Sentara hospitals for all acute care. The goal of the pilot is to decrease the expected rate of growth in health care costs by 30% by decreasing admissions, ED visits, readmission rates, and overall costs. Staff members’ roles are being redefined to allow each physician to expand the population base they are managing. Ultimately, the physicians will be paid on a fixed-fee basis to manage their patient population.

In the pilot, PCPs will work more closely with registered nurses and physician assistants. They will delegate more tasks to staff members, such as scheduling CTs and MRIs. Patients will have a designated staff member who acts as a clinical coordinator to see that preventive care visits are scheduled and to follow up on any acute or chronic conditions to ensure patients are managed appropriately.

Optima will share cost savings with physicians and hospitals and will thus share risk with physicians. All visits to specialists and hospitals will be paid on a fee-for-service basis out of the per annum fee the physician charges Optima. PCPs stand to lose money if payments out to specialists and hospitals exceed payments in from Optima. Therefore, during the pilot, Optima has agreed to give all the participating PCPs extra revenue to ensure that their salaries remain stable. Similarly, Sentara

hospitals stand to lose revenues if this PCP pilot decreases admissions. If admissions are decreased, Optima will share its cost savings with Sentara hospitals.

Chronic disease management pilot to decrease overall cost of care

A small group of patients with significant chronic disease, who are covered by Optima and treated by SMG specialists, have been chosen to participate in a chronic disease management pilot. These patients, who will have diabetes or congestive heart failure, will work with a care coordinator, primary care doctors, and RNs to manage their illness. The goals include an improvement in patient outcomes, a 30% reduction in hospitalization, and a 30% decrease in the expected rate of growth in health care costs.

Chronic disease management will include follow-up phone calls to remind patients to keep their appointments, medication reminders to ensure that patients are taking their prescriptions, and case management to manage post-acute care. The goal is to link up primary care physicians with telemedicine, nursing homes, home care, and hospitals. In this pilot, payment will not be on a fixed-fee basis. Leaders expect that case management will decrease hospitalizations and lower the cost of care. If this is the case, physicians and hospitals will share bonuses based on the degree of expense reduction.

Bundled payment for procedures

Optima and Sentara are currently designing a process to manage bundled payments for certain clinical procedures. The bundled payment process will involve collecting all related claims for the procedure as well as payment distribution to the constituents of an ACO—the hospital and defined providers of the care. Optima will manage the claims payment and reimbursement distribution process. Sentara is currently exploring which procedures are best for bundling payments. Once these are defined, clinical teams will look for opportunities within the procedures to share savings among providers. Optima may also use this process to serve as a third-party administrator for similar bundled claims processing for non-Sentara ACOs.

Exploring customer accountability: advance directives

In an effort to improve quality of life and cost of care at end of life, Sentara is implementing a system of advance care planning and encouraging all patients that use its hospitals or medical offices to fill out an advance directive. Patients may enroll at offices, hospitals or online. Sentara expects that advance care planning will

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It is difficult to focus on managing the overall cost of care when, historically, the hospital has been rewarded for increasing procedural volume.

help them manage patient comfort and overall cost of care at both hospitals and nursing homes.

III. LEARNINGS

Sentara's growth highlights many of the issues confronting integrated health care systems in the United States. The measure of success of its hospital system is found in growing its assets through acquisitions and from growth in volume of admissions and procedures. In contrast, the measure of success of its health plan is marked by expense management and decreasing overall costs of care. These goals are achieved by managing chronic disease to reduce hospitalization and acute care episodes. Sentara is now growing its hospital footprint while exploring "transformation of care" innovations that aim to decrease hospital admissions. Protecting and developing the assets of the hospital system may impede how much the system is able to commit to disruptive innovations. In sum, it may be challenging to grow the assets of a hospital system in parallel with initiatives that ultimately drive down procedural volume.

The road to integration: more difficult to align systems that start as a hospital than systems that start as a health plan

Many Sentara leaders agreed that other integrated systems that start as a health plan may have a smoother path to integration. There was consensus that when a business begins as a hospital, the hospital is seen as a revenue center. This drives hospitals to increase procedural volume—as one leader said, "Volume is revenue"—and pursue higher margin activities, as both increase revenues in a fee-for-service environment. Both also increase profits in a system with high fixed costs.

Increasing volume and pursuing higher margin activities is frequently at odds with pursuing efficiencies and driving down health care costs. Kaszubowski explained, "We manage our costs at the hospitals, but we have not created the linkage between primary care and the hospitals." Recently, Sentara hospitals were advertising that they were performing a new artificial cervical disk surgery. Optima health plan did not cover the surgery, creating an obvious misalignment between the hospitals and the health plan. It is difficult to advocate for moving care to more cost-effective venues (i.e. employer sites, e-visits) when hospitals need to cover fixed costs. It is difficult to focus on managing the overall cost of care when, historically, the hospital has been rewarded for increasing procedural volume. It is also difficult to manage chronic disease, as doing so will take patients out of the hospital.

Also, starting as a hospital drives behaviors that are not necessarily in the best interests of an integrated system. Gray described that in 1999, Optima had 40 employees that “did nothing but adjudicate claims between our hospitals and health plan. They eventually worked it out economically, so we stopped it.” The individual profit centers of each hospital create incentives to increase revenues that are not necessarily aligned with other parts of the system.

In a fee-for-service environment, a hospital system is not rewarded for decreasing overall cost of care. Kern rhetorically asked, “If we drop admissions and decrease utilization of scans and procedures, have we cut costs? Have we really cut costs? No.” Sentara covers its high fixed costs by driving utilization rates at its hospitals. If there are successful cost-cutting measures, leaders need to increase market share and add procedural volume elsewhere in order to “backfill.”

This alignment issue is evident in Sentara’s emergency departments (EDs). Andy Hilbert, chief financial officer, Optima, explained, “I went to a presentation about how to reduce ED usage through disease management. The prior presentation was about how to increase revenues in the ED. They were presenting a marketing plan that advertised a 30-minute wait at Sentara EDs. From a health plan perspective, the ED is the worst place for care; it is the most expensive venue. But, for a hospital, the ED has huge profit margins.” The ED example illustrates the fact that cost-cutting is often at odds with revenue production at a hospital-centered health care system. Another alignment issue is that each hospital competes for profitable procedures and specialties. When hospitals are evaluated by individual profits and losses, they have little incentive to agree on shared resources. For example, the heart hospital has some redundancies with other Sentara hospitals. Presumably, some of these redundancies are due to the necessity of providing urgent care locally, but other redundancies may be due to the profitable nature of cardiac procedures. In general, it will be difficult for hospitals to outsource profitable procedures to a center of excellence when the procedures are essential to an individual hospital’s bottom line.

Several executives said that until Sentara has shared bottom lines, the units will operate at cross-purposes. As one leader said, “Each hospital is still very much evaluated by their individual bottom line....We have to change the whole system... The technology is there to drive change. The capability is there to drive change. The roadblock is politics, relationships and the reimbursement model.”

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Figure 3 *Non-integrated, partly integrated, and fully integrated health care systems*

Health care system	Business structure	Provider relationship with system	Payer relationship with system	Patient relationship with system
Non-integrated	Stand-alone hospital, insurer or physician practice	Physicians contract with hospital or practice to care for patients, often on fee-for-service basis	System contracts with multiple payers to provide care for payers' covered lives	Patient chooses to go to hospital or physician practice that their insurer has a contract with and pays on fee-for-service basis
Partly integrated	2 or 3 tightly-linked: hospital, insurer, and physician practice. Sentara owns all 3 elements.	Physicians may be employed or may be independent and contract with institution. Employed physicians may be salaried or productivity-based.	System may take payments from its own insurer and outside insurer; may give preferred rates to its own insurer	Patient insured by system goes to hospitals and providers in system at reduced rate or outside at higher rates. Patients not insured by system are still welcome and may be significant part of patient volume
Fully integrated (also called closed- or staff-model HMO)	Hospital, insurer, and physician practice considered one entity	Physicians are often salaried; some, but not all compensation may be related to productivity	System takes payment only from own insurer	System takes only patients whom it insures

Financial benefits of partial integration: a hospital system benefits from close ties to an insurer and physician practices

Figure 3 explains the models a health care system may assume: non-integrated, partly integrated, and fully integrated. This section explores the benefits for Sentara of being partly integrated; the following section describes how the marketplace values partial integration.

Sentara reaps many benefits from having integrated to also own Optima health plan and Sentara Medical Group. Krakaur said, “Optima, the medical group, and the hospitals are the three elements of our triangular hedge.” Currently, Sentara has approximately \$3 billion in revenues, with \$2 billion coming from its hospitals and \$1 billion from the health plan. The medical group operates at a loss of about \$6 million annually without allocated overhead, but has been important in securing

hospital admissions. It may also be important for revenue production if reform drives a switch to capitated or fixed-fee payments. Krakaur explained, “We will need to demonstrate to the government that we can manage the health of larger groups of the population. If we are caring for 4 million people in Virginia [through our hospital base and we have a health plan and a medical group], we can take capitation on that population.”

As an integrated system, Sentara can test innovations on a small, closed scale. Kaszubowski explained that Sentara is trying to understand new payment methodologies: “How do you get a payment for managing a population? How do you divvy up hospital, physician, and long-term care payments? An integrated deliverer can try out things in an attempt to answer these questions.” If successful, they can scale up either internally or through relationships with other payers.

Why Sentara has not pursued full integration

Leadership prefers partial integration

Sentara leaders are in agreement that, for now, Sentara should remain partially integrated rather than become a closed, staff-model HMO. “The experiment with MaxiCare left a bad taste in our mouth with regard to staff-model HMOs,” explained one executive, “and that has made us very cautious about closed systems.” In addition, Sentara explored bundled payments with cardiologists at its hospitals in the late 1990s. That experiment “ended badly,” said Yates, and damaged relationships with cardiologists for some time afterwards. Bernd explained, “Being fully integrated might be easier but we have been successful at partial integration. With the financing element Optima provides, we can partner with physicians who are not employed and create the right incentives in the hospital to streamline care. We have aligned incentives between Sentara and contracted physicians through our focus on outcomes and quality-based incentives.” Maizel feels the decision to remain partly integrated is important: “I do not want to move in the direction of being a closed system, [closer to] our insurer. I have a bias, in that I do not know what the insurer brings to the equation... We are also very active with the AMGA [American Medical Group Association], who does not feel like you need to own a payer. They also don’t believe a hospital needs to be part of your ACO because a hospital is a cost center.” Finally, some leaders think that the partially integrated system may be more cost-effective than a closed system. Heuser explained, “The ACO model [under a fully integrated, staff-model HMO] looks great, but if you

Sentara leaders are in agreement that, for now, Sentara should remain partially integrated rather than become a closed, staff-model HMO.

“The marketplace in Virginia is not interested in a closed network. Payers and employers want a broad, robust network.”

—Howard Kern,
COO

go to that, in some cases it will be more expensive. After you pay for the EMR and ensure quality, costs may increase.”

Providers prefer to work for partially integrated vs. closed systems

Physicians historically have had the dominant position in deciding relationships and pricing. Heuser explained that locally, “providers have a lot of power” to set pricing and have not wanted to join closed groups. Physicians in a nearby market had expressed dissatisfaction with a closed system set up by Carilion Clinic in Roanoke, Virginia. Employed medical groups were historically perceived as offering a lower salary, less autonomy, and requiring physicians to practice cookbook medicine. In order to bring physicians in-house, executives said that Sentara “overpaid” for physician practices. Yates said, “We have many contracted physicians, and they do not want a closed system because that would disturb relationships. Any arrangements we have need to be perceived as fair by physicians. Sentara tells physicians they can relate to our health system in a variety of ways and we have to pick the right vehicles for that to happen.” Szalwinski went further, saying, “You could say we are leaving our options open as far as our relationships with physicians, but you could also say we are forced by the market to have certain relationships.”

Consumer dislike of closed networks

Perhaps most importantly, the local market has dissuaded Sentara from pursuing full integration. As Kern explained, “The marketplace in Virginia is not interested in a closed network. Payers and employers want a broad, robust network.” Gray concurred with, “The customer in Virginia is not comfortable with ‘bigness’ or with what is perceived as a closed system.” Multiple leaders referenced the fact that the customer base is wary of “bigness.” For example, Optima used a different name for its health plan in order to avoid full association with Sentara. When asked whether the marketplace might value the quality outcomes that a highly integrated system could deliver, several leaders supported Dudley’s comment that, “Right now, employers are concerned about price. Quality is second to price concerns.”

Sentara’s mission also includes serving its local community, which includes taking on Medicaid and Medicare recipients. Kern explained, “Given our community responsibility, we have [remained open and] have a number of different

kinds of relationships. Compared with a Kaiser which does not have a significant representation of Medicaid patients, we serve our community, and that means taking patients from multiple insurers.”⁸

Because Sentara takes payment from outside Optima, Sentara hospitals can serve nearly an entire local population. Sentara maintains flexible relationships with multiple external payers to generate patient volume. Sentara is also keeping an open mind about how contracts will be structured with these payers in the future. Yates explained, “Now, reimbursement is going to change and the timing is different. My sense is that Medicare will be more willing to work with us. Anthem, the largest private payer, will be watching our pilots. We might be able to work with them around specific diagnoses... It seems like payers need stages to be led into things.” He continued, “Anthem has a lot to lose if they miss an opportunity to partner with us in creating new payment structures.” Sentara has cultivated a reputation in the marketplace as a provider network willing to work with all payers and explore different pricing arrangements. This flexibility and market would be lost if Sentara were to become a closed system.

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Changes in marketplace may move Sentara toward integration

If integration is considered on a spectrum, Sentara has historically remained closer to the non-integrated end of the spectrum than the fully integrated end. Historically, consumers, providers, and payers in the local market have preferred more choice and a less integrated delivery system. There are many indications that these market forces are changing. “The younger generation of physicians is better at understanding [salaried positions],” Bernd said. Consumers are more focused on price, and payers may switch to fixed-fee payment models. As physicians, consumers, and payers evolve and policy changes, there is consensus that tighter integration may follow (see **Figure 4**).

Avoiding the managed care failures of the 1990s

Sentara believes that physicians should not have to manage the risk of fixed-fee payment models. In the HMO model of the '90s, physicians had to drive down

⁸ Kaiser Permanente takes very limited numbers of Medicare and Medicaid enrollees. Other not-for-profit health plans generally have a larger proportion of Medicare and Medicaid enrollees.

Figure 4 Market forces that might move an integrated delivery system toward greater integration

		Historical perception of constituency	Current perception of constituency	
Historical setting	Less integrated	<ul style="list-style-type: none"> HMO failure in 1980s Bull market, wealthy employers competing for employees 1980–2003 	<ul style="list-style-type: none"> 2008 Recession Cost-sensitive employers 	More integrated
Customized employers & individuals		<ul style="list-style-type: none"> Hate “bigness” Want gold-plated plans, compete for employees based on richness of benefits Want choice 	<ul style="list-style-type: none"> Interested in “price, price, and price” Willing to have less choice if means lower cost 	
Physicians		<ul style="list-style-type: none"> Do not want salary Want autonomy: multiple contractual relationships & admitting rights to many hospitals Perceive guidelines or algorithms as “cookbook medicine” 	<ul style="list-style-type: none"> Willing to consider salaried position Willing to enter single relationship, younger generation does not perceive as detrimental to autonomy Evidence-based medicine perceived as higher quality 	
Payers: Medicare/Medicaid & large insurers		<ul style="list-style-type: none"> Pay fee-for-service, strive for cost containment Manage cost of care through claims adjustments 	<ul style="list-style-type: none"> Moving to fixed-fee, capitated and/or bundled payments Manage cost of care by eliminating FFS, give provider responsibility for overall cost of care 	

costs and maintain quality without the necessary incentives or support to do so. Heuser believes that physicians want to practice medicine “the way they are taught to practice medicine; that is what they are best at.” Yates added that Sentara is thinking about “how the system and the physician can become accountable. And, what are the legal and system structures that support that?” Sentara believes in aligning incentives to best share the risks of managing costs and maintaining quality with physicians and patients.

Impact of health care reform

Sentara sees itself at a crossroads between two policy environments, and therefore, two business models. The first model is the current fee-for-service system that encourages hospitalization and high utilization. Meaningful reform might spur

the second model of fixed-fee payments, increase chronic disease management and create a significant reduction in hospital utilization.

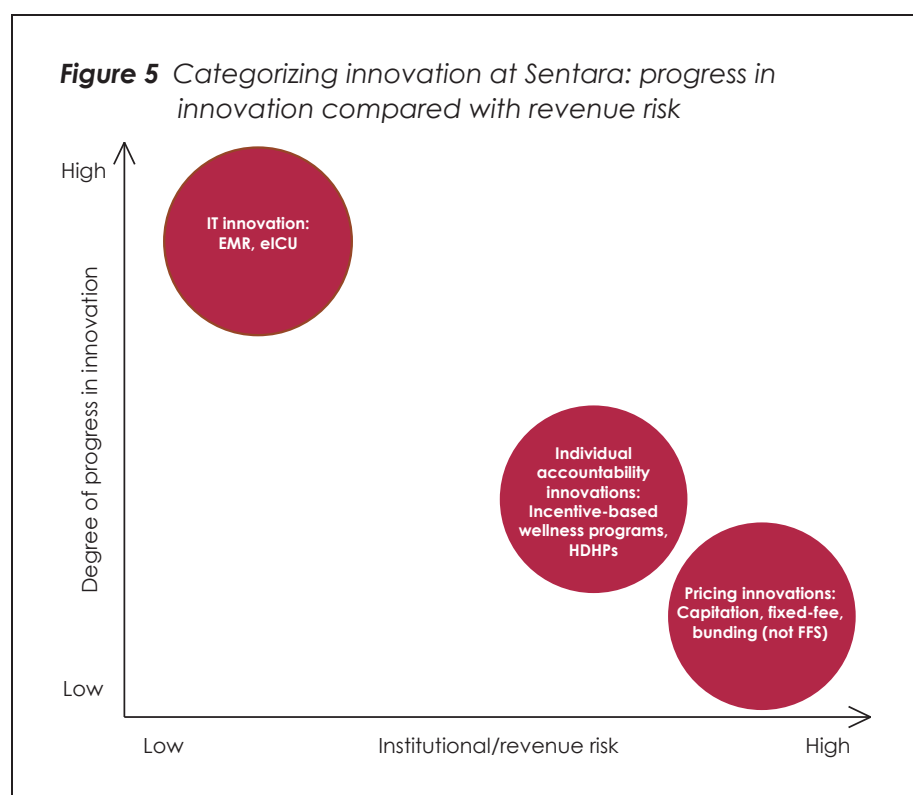
Leaders are in agreement regarding the need for policy reform, and echoed Bernd, who said, “The system is broken.” There is consensus at Sentara that there are two main drivers of change to policy reform. The first driver will be making the switch from fee-for-service to fixed-fee pricing. Kern emphasized, “It is no longer about optimizing financial performance. We can do all sorts of things to manage the cost of care, but these are one-offs. It is about fixing the system.” The second driver will be increasing patient responsibility for health. “We incent people to be sick. Until we change that, we cannot change anything else,” explained Szalwinski. There is also consensus that reform has to happen first. Szalwinski added, “I think payment reform will drive model reform and will drive care-delivery reform. My prediction is that if we go to bundled payment, the mechanics of divvying up the payment will be easier under an employed situation. Where is Sentara as far as preparation? We’re at the thinking and piloting phase, not implementation. But we do have Optima, who knows how to absorb money and distribute it.” Finally, Bernd explained that reform may drive providers towards integration: “I cannot say we would never become fully integrated... Especially if we see Congress making large reimbursement cuts, then we will see massive integration.”

Leadership is wary that impending insurance exchanges required by the Patient Protection and Affordable Care Act will devalue the quality Sentara focuses on. Hilbert explained, “Exchanges have a huge selection risk. The more you migrate towards an exchange, the more you become a commodity and the less important the integrated system. Through an exchange, you are not telling the story of continuity of care and having the data to manage chronic disease. Compare that to brokers selling integrated systems to large employers. Brokers can explain the benefits of integration well.”

Preparing for change

Sentara may expand geographically through further hospital acquisition. As Krakaur explained, “We have had many more opportunities to grow than the board permitted us to act on in the past. Now our goals have changed and we may be able to grow a lot more... Getting our hospital revenues to \$3 billion brings us much better scale as far as the supply chain. Right now, we are at \$2 billion in revenues from the hospitals. Also, we need to demonstrate to the government that we can manage the health of larger groups of the population.” Krakaur believes that growth

Sentara may
expand
geographically
through further
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in hospital systems is intensely regional, saying, “A lot of people debate what is the best strategy for growth, but it ends up being market-specific.” Finally, he explained that the marketplace historically cuts rates and “in the absence of the ability to raise prices, if you do not grow, you will die.” Sentara expects to increase its hospital footprint to maintain revenues, increase scale and position itself to negotiate with payers if reform changes the marketplace.

Innovations at Sentara can be grouped by their associated revenue risk (see **Figure 5**).

IT innovation would be classified as less risky, as it requires a capital outlay at the outset, which can be recouped or depreciated over time. In comparison, committing to fixed-fee payment structures or bundling are high-risk innovations, requiring business-model risk. Sentara is assessing the right market conditions before committing to pricing innovations. Kern summarized, “Payment reform is going to drive health care reform. In the meantime, we are making money in the straddle.” Sentara will continue to operate a fee-for-service, hospital-based health care system while positioning itself to best respond to policy reform. In the process, Sentara may move toward a more highly integrated structure. Yates expressed his optimism regarding the potential of integration when he said, “My sense is that integrated systems have scratched at the surface of what is possible.”

Appendix A Sentara hospitals

Hospital	Date acquired	Number of beds	Location	Notable characteristics
Sentara Norfolk General Hospital	Merged in 1972. Adopted Sentara name in 1982.	525	Norfolk, VA (SE)	Level I Trauma Center, Burn unit, Sentara Heart Hospital-within-a-Hospital
Sentara Leigh Hospital		250	Norfolk, VA (SE)	Cited in 2001 & 2002 as top performer in “100 Top Hospital National Benchmarks”
Sentara CarePlex Hospital	1988	200	Hampton, VA (SE)	One of the busiest emergency depts. in state, bariatric surgery
Sentara Bayside Hospital	1991	158	Virginia Beach, VA (SE)	Plan to move to all-outpatient hospital plus 24-hour Emergency Room by 2011
Sentara Virginia Beach General Hospital	1998	274	Virginia Beach, VA (SE)	Cited in 2001 & 2002 as top performer in “100 Top Hospital National Benchmarks”
Sentara Williamsburg Regional Medical Center	2002 (affiliation began in 1996)	145	Williamsburg, VA (SE)	6 years with no cases of ventilator-associated pneumonia. Top 10 in Leapfrog Hospital Recognition Program. Patient-centered healing under PlaneTree model.
Sentara Obici Hospital	2006	150	Suffolk, VA (SE)	
Sentara Potomac Hospital	2009	183	Woodbridge, VA (Northern)	Acquisition included ambulatory campuses
Martha Jefferson Hospital	2010	176	Charlottesville, VA (Central)	Merger expected to be final in mid-2011
Rockingham Memorial Hospital	2010	238	Harrisonburg, VA (North/Central)	July 2010: signed letter of intent to affiliate; merger may be final by 1 st quarter of 2011
Sentara Princess Anne	Under construction	120	Virginia Beach, VA (SE)	Scheduled to open in 2011

About the case study series

Disruptive innovations in health care have the potential to decrease costs while improving both the quality and accessibility of care. This paper is part of a series of case studies that uses disruptive innovation theory to examine integrated delivery systems and aims to identify the critical factors necessary to achieve many of the desired quality, cost, and access improvements called for in current reform proposals. By providing a historical and strategic analysis of integrated fixed-fee providers, this project hopes to accelerate the adoption of disruptive innovations throughout the health care delivery system.

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Innosight Institute, founded in May 2007, is a 501(c)(3) not-for-profit think tank whose mission is to apply Harvard Business School Professor Clayton Christensen's theories of disruptive innovation to develop and promote solutions to the most vexing problems in the social sector. Innosight Institute's case studies are for illustrative purposes only and do not represent an endorsement by Innosight Institute.

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